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ined with the colored worsteds and passed as having satisfactory color perception made the following mistakes with the lantern: No. 2 (green) he called red; No. 4 (green) he called red; No. 5 (red) he called yellow; No. 8 (red) he called green; No. 9 (green) he called red; No. 10 (green) he called red; No. 12 (green) he called red; and No. 13 (white) he called red. On testing him in my office he made some of the characteristic mistakes with the colored worsteds, but his former examiner had passed him, and I do not think this mistake would have been made if the lantern test had been used in addition to the worsteds.

The lantern gives some information that we do not get with the worsted test, especially in regard to small defects in the central portion of the retina, in regard to the recognition of signal colors when affected by fog or smoke, and in regard to the ability to give correctly the proper name to the color shown. On the other hand, the test with the colored worsteds, in which the colors are selected by comparison with certain test colors, as proposed by Professor Holmgren, and which when properly made is a true test by comparison of colors in which no names are used, gives some information that the lantern does not give. Both tests should be used in order to get satisfactory results and make sure that all the dangerous cases of defective color perception have been discovered.

IMPROVED METHOD OF TESTING COLOR PERCEPTION.*

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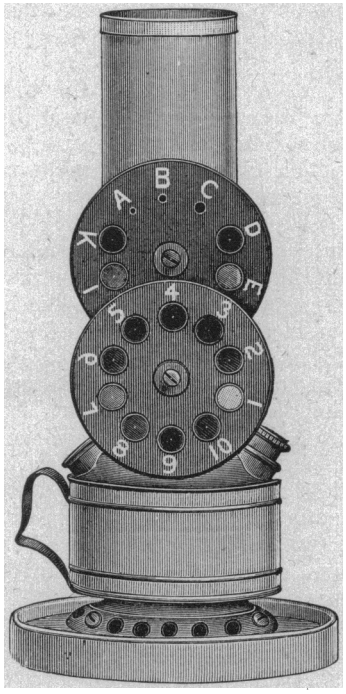
Dr. Williams' remarks leave but little to be said in favor of the use of a lantern for examination of the color sense. In the system in use of the Pennsylvania Railroad the lantern of Donders has been advised for the testing by the ophthalmic expert, but I am now convinced that a test of this kind should be used in conjunction with the colored wool stick by all the examiners who act under the direction of the division superintendent. Two-fifths of the time of a railway employee's life is spent in governing his action by colored lights by night. The lantern furnishes the test. It also gives us the means of detection of central scotomata, or the color defects caused by central amblyopia induced by tobacco and alcohol. It consists of a small kerosene lamp, or spring candle-stick on which can be placed an asbestos chimney seven inches in height. This can also be placed over an argand burner or an electric light. Two disks of metal are attached so that they can be partly superimposed. Each disk has ten openings, the upper marked by letters from A to K, the lower by the figures from 1 to 10. They are too small to be distinguished at the proper distance. The lower disk has its openings, 10 mm. in diameter, filled by the four colored glasses used on the roads, viz., white, red, green, and blue. This is for the examination in chief, the upper for the cross examination. The upper disk has four openings, from 1 to 10 mm., which can be brought over the lower glasses to diminish their size. The other openings have dark London-smoked and ground glass to indicate the effect of storm, snow, rain, or fog. G, H, and I are efforts at imitation of confusion colors, and are called and seen as white by the color-blind. They are light smoke, pink, and blue-green to the normal eye. The last is K, a cobalt transmitting both red and blue light, both evident to the perfect eye, but appearing as blue only to the color-blind. The yellow color of the kerosene flame prevents the blue from being well seen in the pink and blue-green openings, which therefore appear white to the color-blind. The examination is made in a dark room, the man being placed 5 meters away. As the examiner turns the disk, the man is directed to call out the colors presented. Any mistakes are at once detected and if it be required can be recorded on proper blanks by using the figures or letters employed.

The degree of color defect can be determined by the use of the openings from A to D. A man with full color sense should perceive the colors when the smallest openings, 1 mm., are used. If he fails, the larger ones are used, and if at 5 mm. he fails to see the light through 10 mm. opening he is much under standard, having only 1/10; by placing him at 1 meter he may again fail and show a defect of 1/50.

No man should pass who would call the red signal, green or white; the green one, red or white; or the white one, red or green. The man should also be asked to



tell what the lights indicate as signals, the white, safety; green, caution; red, danger, halt; the blue, the inspection light, indicates that a car should not be moved showing a blue light.

To enable the officers of the road, the examiners or others, to appreciate partly the defect of color-blindness the chimney may be placed over an alcohol lamp having mixed with the alcohol a quantity of common salt. The colors are then all destroyed for those having normal sight. The illumination of the color stick, or of other colored wools in a dark room by this yellow light apparently destroys the colors, and closely imitates the defect of the color-blind. With the addition of this convenient lantern to the color stick the so-called Pennsylvania Road System[1] may be regarded as more complete. It has been in use for twenty years on that road, and has been adopted by other corporations estimated to control in all 150,000 miles of track. The lantern

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1 Published in full in the 6th edition, Nettleship on Diseases of the Eye.

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and other instruments mentioned in the P. R. R. system can be obtained from Queen & Co., Philadelphia, accompanied by certificates of their accuracy signed by Dr. Thomson.

CUTANEOUS MANIFESTATIONS IN DIABETES MELLITUS.*

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In company with its direct analogue, histological as well as in some degree functional, the skin suffers many insults from the glycosuric state, subjectively, and often bears decided objective symptoms resulting therefrom.

It never should be forgotten, though it often is, to what large degree vicarious elimination of morbid and effete matter is carried on by the skin, in its natural effort to relieve other organs in the human economy, more particularly the larger splanchnic glands, as for example the liver and kidneys, as evidenced in those cases by icterus, uridrosis, etc.

In fact, the integument must really be recognized, taken in its totality, as the largest eliminating organ of the body, which perhaps is only another way of putting the aphorism of Æsop, "that there is nothing like leather."

Skin symptoms are frequently the first to call our attention to the presence of the morbid condition which is being considered in its various aspects by this Association, and which from its most noteworthy and constant index, presence of sugar in urine, we call glycosuria.

To enumerate all the subjective and objective phenomena which this morbid condition may produce in and on the skin would almost seem like having to give a list of the ordinary diseases thereof, certainly of all the so-called primary lesions. I shall content myself with commenting on a few of the more usual, and easily recognized—though not always so by the general practitioner—and one or two of the rarer manifestations. This list may be made out in the order of relative frequency, as follows:

1. Xeroderma, or a condition of dry skin.
2. Pruritus, without any, or at least any noteworthy, objective lesions, the genital regions in both sexes apparently suffering most.
3. Eczemas, partly neurotic, at other times catarrhal, having as chief seats the genitals, and flexures of the body and limbs.
4. Furunculosis, often general in character, but sometimes regional. This is often the case with the very common occurrence of its analogue—carbuncle. The seat of preference seems to be the extensor aspects of the body, as nucha, gluteal region, etc.
5. Conditions of erysipelatous manifestations and gangrene; late symptoms as a rule will not be considered here, as they belong chiefly to the domain of general surgery.
6. Xanthoma diabeticorum, a disease accompanied by formation of xanthomatous new-growths, often in immense quantities, and more particularly over extensor surface of body and limbs.
7. Possibly, the recently recognized and not much investigated "blastomycetic dermatitis," in which tumors looking like verrucous lupus, or the so-called "tuberculosis verrucosa cutis," become fungoid in character, and on microscopical examination are found to be filled with the fungi of saccharine fermentation. There have been very few cases of this last disease noted or described, not, I think, over twelve in all. I have lately been in communication with its closest and earliest observers—Drs. Hyde and Montgomery, of Chicago—and have begged them to take its possible connection with the glycosuric state into consideration, which has hitherto been but imperfectly done; they have considered it a good suggestion. It would seem to me, from the nature of the cryptogamic parasite present, to be an interesting point for consideration.
8. Dermatitis herpetiformis—Duhring's disease.

In considering the few points given above in something like sequence, I would say that the dry skin of glycosurics is capable of a simple explanation. The parched lips, the dry throat, the dry condition of the mucous membrane, from excessive excretion of water by the kidneys, are their own explanation. This condition should always excite suspicion in the medical mind. As to their relief as far as practicable, the means are obvious, viz., local treatment, and appropriate diet and medication.

The second in order, pruritus, is always suspicious, and the urine should be carefully studied, not only that of the morning, the so-called "urina sanguinis," but that obtained after a full, rich evening meal. Sometimes the latter shows considerable sugar, when that of the morning does not. A list of palliative and curative remedies is altogether too long to be treated of here. Naturally, always the chief objective point is to relieve the diathetic condition.

Eczemas that occur so frequently, especially in the sites mentioned, may be dismissed briefly. Often the fermentation parasitic element, as well as its congener, the trichophyton, can be detected around the genitals. Lotions mildly parasitic in character usually seem to act better, and are cleanlier than salves in these conditions.

Furuncles and carbuncular states need appropriate treatment. I need not give any specific recommendations; the recognition of the cause and the attention as needed to the local condition are generally plain. I will, however, say here that in conjunction with local treatment mild dosage with arsenic and the use of Startin's old tonic are of manifest and great advantage.

I shall not consider the purely surgical questions of erysipelas and gangrene, as the gentlemen preceding me have done it so fully. I would say, however, that the only cases I have ever seen of erysipelas of the fauces and upper air-passages occurred in diabetics.

The sixth condition, that of "xanthoma diabeticorum," is now a well-recognized and striking disease of the skin, and I may be pardoned perhaps for a few moments in its description, as I very lately have had a very striking example of this condition, in the person of a woman aged about 40. [Photographs were exhibited.] It will be seen that she is covered with an immense number of papular, tubercular, and nodular tumors over extensor surfaces and limbs. These in the natural light appear of a yellow—xanthomatous—color and almost exactly resemble the tumors one sees around the eyelids, especially in the upper lid around and near the internal canthus.

This woman has now suffered nearly six years with this affection, always constantly present, but decreasing somewhat in summer, and every year becoming relatively worse. The disease in question has now been recognized for about fifteen years, first, I believe, by Malcolm Morris, of London. There are only about

*Read at the Sixteenth Annual Meeting of the Fifth District Branch of the New York State Medical Association, held in Brooklyn, May 22, 1900.

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